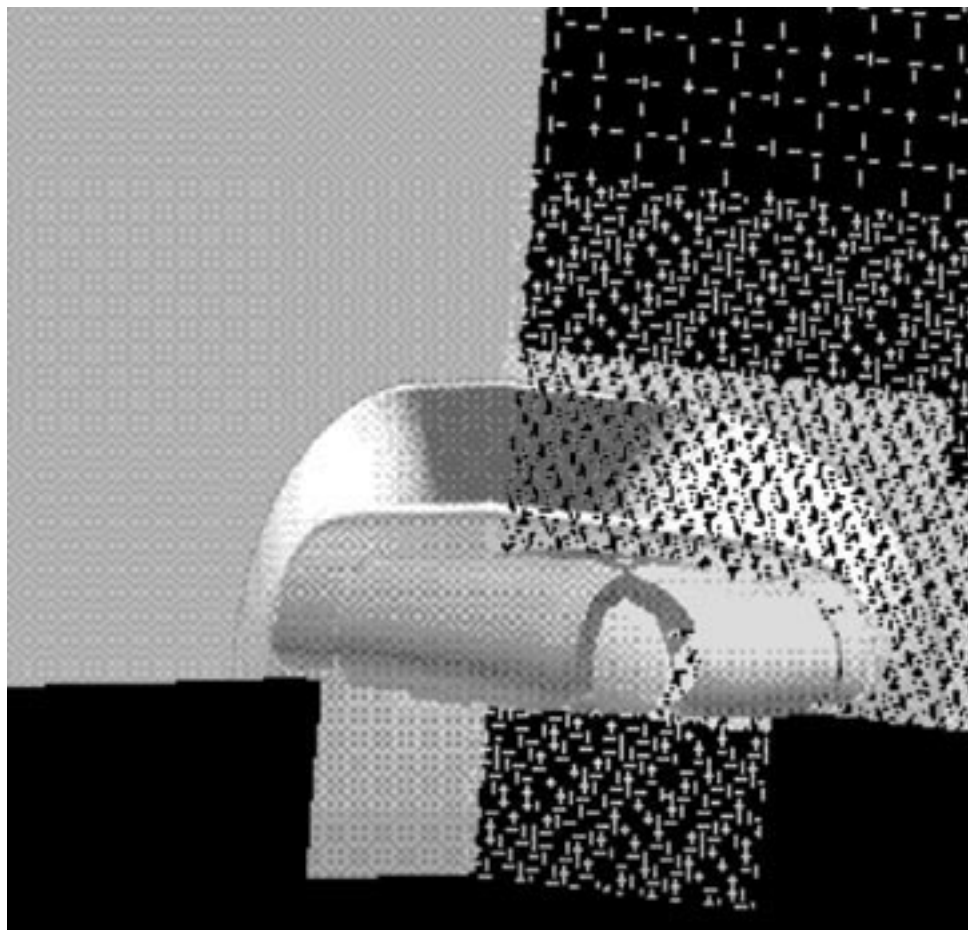


BITS

computing & communications news

FEBRUARY 1996

COMPUTING, INFORMATION, AND COMMUNICATIONS (CIC) DIVISION • LOS ALAMOS NATIONAL LABORATORY



This illustration displays the results of a 3-D compressible inviscid fluid calculation. The problem domain in this calculation is almost cubical except that another small cubical region is attached to the bottom. The illustration shows hot fluid expanding through a cubical hole into a cold region. The slice on the left shows density contours while the slice on the right shows grid refinement. The doughnut structure in the middle is a density isosurface and displays the vortical structure of the simulation. The calculation was carried out on the Thinking Machines CM-5 computer at Los Alamos using adaptive mesh refinement. The use of adaptive meshes often dramatically reduces the amount of computational resources needed to solve simulation problems. This work was funded by the DOE HPCC program and was carried out by Marsha Berger of New York University and Jeff Saltzman of Los Alamos.

Inside this issue

Feature Articles

CIC Helps U.S. Postal Service Provide Secure Electronic Commerce for American Citizens	1
Massively Parallel Supercomputing in the Secure ICN	1
Cray Programming Environment 2.0	2
FY96 Rates for CIC Products and Services	3

The World Wide Web at LANL

Tips on Writing HTML <TABLE>s	10
-------------------------------	----

Tips from the Consultants

How to Point the Eudora Finger in the Right Direction	14
---	----

Microcomputing News

Web Browsers and Helper Applications	16
--------------------------------------	----

Cluster Corner

Introducing the Cluster Web Pages	18
-----------------------------------	----

In the Classroom

CIC Computing Classes	21
Lab-Wide Systems	24
Research Library	26

Index

31

CIC Customer Service Center (505) 665-4444 or cichelp@lanl.gov

Integrated Computing Network (ICN)

Consulting:

Centralized scientific and engineering computingconsult@lanl.gov or 7-5746

Lab-wide administrative and business systems.....labwide@lanl.gov or 7-9444

Passwords (required for access to ICN)validate@lanl.gov or 5-1805

Systems documentation (local and vendor supplied).....7-6992

Central Computing Facility (CCF).....7-4584

Advanced Computing Laboratory (ACL)5-4530

Desktop Support Center (DSC)7-4357 (7-HELP)

(PC Help for IBM and Macintosh personal computers)

For questions about PC software: PCSW-help@lanl.gov or 7-5884

For questions about PC hardware: PCHW-help@lanl.gov or 7-9372

For Macintosh questions: Mac-help@lanl.gov or 5-1361

For UNIX questions: UNIX-help@lanl.gov or 5-0433

For groups with CIC-2 support contracts: 5-2220

Telephone Services Center7-3400

(includes voice mail)

Computer training

Lab-wide systems support training7-9444

Computer/workstation training7-9399

Personal computer training7-9071

Microcomputer support facility seminars7-4357

(Macintosh/IBM software, lending library)

List of Forms

Course Registration Form for CIC Computing Classes21

ICN Validation Request Form27

Reader Feedback Form29

CIC Helps U.S. Postal Service Provide Secure Electronic Commerce for American Citizens

Everyone is talking about electronic commerce: doing business and obtaining government services in cyberspace. However, building this brave future requires solving a fundamental problem—authentication. On the Internet, no one knows who you really are (to paraphrase a well-known cartoon caption).

The United States Postal Service (USPS) sees securing this electronic future as the natural extension of its historical role as a facilitator of communications. In the near future, USPS plans to deploy a suite of Electronic Commerce Services (ECS), which will provide a public-key authentication and secure messaging infrastructure for the U.S. population at large.

However, these plans raise substantial computing and security issues. How should the ECS architecture be configured? Will it scale to national scope and increased demand? Will it be fault-tolerant? Will it resist attacks by hackers and organized information terrorists? Can the proposed cryptographic and security protocols even provide the services advertised?

To address these issues, USPS recently hired teams from Los Alamos and Stanford Research Institute to jointly conduct a design and review of the system architecture. The project, which filled an intense six-week schedule, provided USPS management with an outside evaluation of their existing prototype system, suggested directions for needed future work, and proposed alternative high-level system designs.

As USPS enters the next phase in bringing Electronic Commerce to citizens at large, Los Alamos will supervise the security of the system and protocols. Because the reliability and safety of doing business in the nation's paperless, electronic future hinges on the ECS system, USPS hopes that utilizing the expertise at Los Alamos will produce a system that is more secure and successful.

The Los Alamos team was headed by Dr. Sean Smith of CIC-3 and included Dr. Vance Faber (CIC-3), Rich Fortson (CIC-3), Dr. John Hall (CIC-12), Ron Krantz (CIC-12), Tim Merrigan (CIC-5), Dr. Timothy Thomas (CIC-3), and Dr. Harvey Wasserman (CIC-19). Dr. Thomas developed the project as part of his duties as the compliance and standards officer attached to the Web Interactive Network of Government Services (WINGS) project being developed at Postal Headquarters in Washington D. C. This work also meshes with several other CIC-3 projects aimed at helping government agencies safely and securely migrate services from paper into the Electronic Age.

Sean Smith, sean@lanl.gov, (505) 665-6802
Computer Research and Applications (CIC-3)

Timothy Thomas, trt@lanl.gov, (505) 665-3700
Computer Research and Applications (CIC-3)

Massively Parallel Supercomputing in the Secure ICN

In January of 1995 a long awaited Supercomputer was installed in the Laboratory Data Communications Center—the Cray Research Inc. (CRI) T3D massively parallel supercomputer. A true MIMD (Multiple Instruction, Multiple Data) machine, the T3D provided code developers with their first crack at this architecture for secure computing. Previously, all MPP code development in the Secure ICN had been of the SIMD (Single Instruction, Multiple Data) variety provided by the Thinking Machines Corporation Connection Machine 200. In SIMD machines the same instruction is executed by every processor on a different set of data. MIMD machines such as the T3D and the TMC CM5 (currently residing in the Advanced Computing Laboratory) allow the execution of different instruction streams simultaneously on different sets of data. The T3D was “front-ended” by a 4-processor Cray YMP with 64 megawords (MW) of 64-bit SRAM memory for

operating system functions such as I/O and process management. The T3D and YMP, which were known collectively as machine Tau, provided the MPP programmer with 512 DEC Alpha EV4, 150 MHz processing elements (PEs) distributed over a high-speed torus network. These PEs had access to 32 gigabytes of distributed DRAM memory, four times that available on the CM200.

While MIMD architecture presents a greater opportunity for parallelism, it also presents a greater challenge to the code developer. Progress is being made, however, and preliminary and intermediate results look very promising.

For example, Dave Mandel of XHM is running a smooth particle hydrodynamics code, Sphinx, to simulate high-velocity fracture patterns for the DOD. Preliminary results with a

particle count of 129,508 are being achieved in 72 minutes on machine Tau using 256 PEs with plenty of room for improvement remaining in the hardware. This same simulation would have taken 1426 minutes on a Cray YMP cpu (about 20 times longer). Larry Schwalbe, also of XHM, is using Sphinx to simulate a larger problem for the DOD. His problem uses a particle count of over 600,000 particles. This simulation would not even fit as an in-core solution on a YMP.

Others have also shown promising results. Using Fortran 90, the Pagosa code ran 41% faster than the CM200 version. Again, there is plenty of room for further improvement.

The Tecolote code provides another example of improvement over the same code on a CM200. Currently, an as yet to be optimized C version of Tecolote on the T3D is running at approximately nine times the speed of the CM200 with a comparable cell count.

Finally, Randy Baker and Ray Alcouffe are implementing a 3D neutronics code on the T3D. A Fortran 77 based code, it is up and running on 512 PEs at speeds between 10 to 20 times faster than the CM-200 version.

While computational speed is extremely important, the ability to move large quantities of data in and out of memory is of comparable importance. Recently, working closely with members of CIC-7, CRI has developed an I/O library that spreads individual files over logical partitions of the file system. These files are assigned to distinct sets of disks and disk controllers, thereby increasing the parallelism of the I/O. Using this library Burl Hall of XHM has been able to achieve I/O rates of over 90 megabytes per second with the Pagosa code; that's almost 4.5 times the best I/O rates on the CM200. Using test codes, members of CRI and CIC-7 have achieved speeds in excess of 150 MB/second and are optimistic that these gains can be achieved on production codes.

On January 19, 1996, the Cray YMP that front ends the T3D was upgraded to an 8-processor YMP with 128 MW of SRAM memory, thus furnishing greater cpu power for I/O and more memory for large compilations.

Ray Miller, rdm@lanl.gov, (505) 665-3222
Computing Group (CIC-7)

Cray Programming Environment 2.0

This article introduces the Cray Programming Environment 2.0 for Cray PVP and SPARC systems, which is scheduled for release in early 1996. Future BITS articles will individually address the compilers and the various tools and libraries in more detail. The formal release of the Cray Programming Environment 2.0 for PVP and SPARC systems will be announced through appropriate channels. Although the information in this article is current, the vendor may make changes in the software before it is released. Users should consult the appropriate Cray publications for the most current information. Additional information about programming environment 2.0 is available on the LANL Web. Point your browser to

http://www-c8.lanl.gov/dist_comp2/MATH/prog_env_2.0.html

Components of the Cray Programming Environment 2.0

The upcoming release of Cray Programming Environment 2.0 for Cray PVP and SPARC systems contains the following:

- CF90 Programming Environment 2.0 for the Cray PVP system
- CF90 Programming Environment 2.0 for the Cray SPARC system

- C++ Programming Environment 2.0 for the Cray PVP system

The programming environments for Cray PVP systems include the following software packages: CrayLibs 2.0, CrayTools 2.0, and either the CF90 2.0 compiler or the Cray C++ 2.0 compiler and a C compiler.

The CF90 programming environments are designed to provide both functional and performance equivalency to the CF77 6.0.4 compiling system. At the time of the CF90 1.0 release for PVP and SPARC systems, not all of the features and functionality of CF77 were available. With the release of CF90 2.0, users will be able to replace their CF77 compiling system with the CF90 2.0 compiler.

The CF90 Programming Environment 2.0 for SPARC systems includes the CF90 compiler package, run-time libraries, and the following supporting tools: ATExpert, Program Browser xbrowse, cflist, cflint, libcif, and Cray TotalView debugger. It also contains performance enhancements and CF77 features and functionality not made available in the CF90 Programming Environment 1.0 release.

The C++ Programming Environment 2.0 is the initial release of a full C++ programming environment, supporting both the C and C++ languages. It replaces the Cray Standard C Programming Environment 1.0 and Cray C++ Compiling System 1.0 release packages for PVP systems. Since there are very significant changes in the C/C++ programming environment, we urge users to consult the Web page listed above and the Cray documentation, which is referenced at the end of this article.

The compilers within the programming environment 2.0 release contain performance improvements and fixes to problems reported in previous releases.

CF77 Programming Environments for PVP Systems No Longer Available

With the programming environment 2.0 releases, the CF90 compiler replaces the CF77 compiling system for Cray PVP systems as the supported Fortran compiler. We will continue to receive "bugfix" support through upgrades until March 1996. CF77 support for machine sigma, a Cray T94, terminates on March 30, 1996.

Accessing the 2.0 Programming Environments

The 2.0 programming environments make use of and rely on the "Modules" package. To access any of the 2.0 programming environments, follow the instructions in one of the three options listed below.

- C Shell Users: To access CrayLibs, CrayTools, or any of the compilers (CF90, Cray C++, and Cray Standard C), add the statements below to your .cshrc file. Make sure you enter these statements after all other path settings.

```
if (-d /opt/modules/.) then
  if (-f /opt/modules/modules/init/csh ) then
    # Initialize modules
    source /opt/modules/modules/init/csh
  endif
  module load modules PrgEnv
endif
```

- Korn Shell Users: To access CrayLibs, CrayTools, or any of the compilers (CF90, Cray C++, and Cray Standard C), add the statements below to your .profile file. Make sure you enter these statements after all other path settings.

```
if [[ -d /opt/modules/. ]] then
  if [[ -f /opt/modules/modules/init/ksh ]] then
    # Initialize modules
    . /opt/modules/modules/init/ksh
  fi
  module load modules PrgEnv
fi
```

- Manual Access: After you log-on, interactively enter the above sequence of code before accessing CF90, C or C++, CrayTools, or CrayLibs.

You are now ready to compile, load, and execute your programs.

After initializing modules, you can obtain more information about the Modules program by entering "man module" and "man modulefile." Also, see the on-line documents "Accessing Programming Environment Software" (/opt/ctl/doc/README or /opt/ctl/doc/README.ps) and "Modules: Providing a Flexible User Environment" (/opt/modules/modules/doc/Modules-Paper.ps).

Bob Boland, wrb@lanl.gov, (505) 667-1729
Distributed Computing Group (CIC-8)

FY96 RATES FOR CIC PRODUCTS AND SERVICES

Many of the recharge rates for CIC products and services are listed in the tables found on pages 4 through 9. While not an exhaustive listing, these tables should provide CIC customers with some useful information about rates. Please use the phone number listed by each group of products or services to obtain additional information.

CIC Rates for FY96

Recharge Title	Rate	Units
ICN Services (7-5746)		
ADSM Host Registration	\$71.40	one-time fee
ADSM Node	\$14.00	nodes/month
ADSM GB	\$2.00	GB/month
CFS	\$0.10	MW/month
CFS Arch	\$0.054	MW/month
CFS Accesses	\$0.10	each access
CFS Files	\$0.03	files/month
CFS Off-site	\$0.095	MW/month
NFS Disk	\$35.00	GB/month
ICN all-in-one/OFVax/Canyon	\$62.00	each month
ICNpop(+)/Notes	\$21.00	each month
ICN Account (Password)	\$7.00	each mont
ICN SmartCards	\$150.00	every 3 years
ICN micom	\$39.00	each month
IP router interface	\$500.00	each month
Non-standard router	\$575.00	each month
ICN Initial Hosts	\$75.00	each month
Worker Machines (7-5746)		
Batch YMP cpu	\$70.50	cpu hour
Batch M98 cpu	\$60.63	cpu hour
Batch mem YMP	\$3.00	memw hour
Batch M98mem	\$0.30	memw hour
Inter cpu YMP	\$94.00	cpu hour
Inter M98 cpu	\$80.84	cpu hour
Inter mem YMP	\$4.00	memw hour
Inter M98 mem	\$0.40	memw hour
Worker cm2	\$312.00	cpu hour
T3D	\$3.00	cpu hour
T94 cpu (interactive)	\$282.00	cpu hour
T94 mem (interactive)	\$12.00	memw hour
Batch T94 cpu	\$211.50	cpu hour
Batch T94 mem	\$9.00	memw hour
IBM Cluster cpu	\$7.00	cpu hour
IBM Cluster mem	\$0.04	MB hour
IBM Cluster disk	\$0.02	MB day
Distributed Computing/CIC-8 (7-5746)		
DPbeta	\$45.00	each month
DPccvax	\$54.00	each month
Desktop Services/CIC-2 (7-5355)		
Installation/Maintenance	\$64.00	hour

(continued on following page)

Recharge Title	Rate	Units
Laboratory Communications/CIC-4 (7-7057)		
Local Dial-Up Modem Access	\$0.02	minute
FTS800 Dial-Up Modem Access	\$0.14	minute
Service Orders		
Update Order	\$52.44	service order
Install Order	\$117.99	service order
Labnet-Video Port	\$30.21	line month
Voice Mail	\$2.35	unit
Direct Pass-thru costs	actual cost	actual cost
JCI Communications	8.57%	surcharge
CIC-4 Labor		
TSM	\$80.00	hour
Other	\$62.00	hour
U.S. West Labor	\$78.89	hour
Long Distance Service		
FTS	\$0.12	minute
FX	\$0.06	minute
Communications Security		
KG-Crypto	\$382.89	month
Secure Telephone Units	\$25.00	month
Secure Modem Units	\$40.00	month
Radios	\$7.85	month
Channel Charges		
<4.8 Kbit/sec	\$15.00	month
4.8 - 19.2	\$30.00	month
56K	\$82.00	month
T-1	\$300.00	month
LAN Gateway	\$300.00	month
TV-Trans	\$660.00	month
Dedicated Fiber Links:		
Intra SA Fiber	\$150.00	month
Telephones		
POTS or 1B+D ISDN (on-site)	\$48.50	month
POTS or 1B+D ISDN (off-site)	\$55.78	month
2b+D ISDN (on-site)	\$67.90	month
2b+D ISDN (town site)	\$78.09	month
Cellular	\$28.00	month
Labwide Systems Training/CIC-6 (7-9444)		
Half-Day Class	\$260.00	student
2-hour class	\$130.00	student
Auditorium Training		
50 Students or Less	\$100.00	student
More than 50 Students	\$50.00	student
On-site Training Visits		
Demonstrations	\$100.00	hour
Hands on Training	\$100.00	hour/student

(continued on following page)

Recharge Title	Rate	Units
Computer Training by Vendor/CIC-6 (7-9399)		
The cost for each class is determined by the type of vendor support and the level of class coordination required.	\$123.50 to \$247.50	student
Communications Arts & Services/CIC-1 (7-4603)		
Composition	\$57.00	hour
Writing/Editing	\$57.00	hour
External Software Design	\$57.00	hour
GRA	\$39.50	hour
Animation Services	\$60.00	hour
Graphic Design	\$60.00	hour
Illustration Services	\$60.00	hour
Integrated Media	\$60.00	hour
Exhibit Services	\$60.00	hour
Translation Interpretation	\$70.50	hour
Media Services/CIC-17 (7-9579)		
Labor	\$70.00	hour
Offset Printing (7-4034)		
Printing Plates	\$17.00	each
8 1/2" x 11" Sheet	\$0.20	each
DocuTech Printing (7-4034)		
DocuTech Scans	\$2.40	each
DocuTech 8 1/2" x 11" Sheet	\$0.10	each
DocuTech Setup	\$70.00	hour
DocuTech Binding	\$0.50	each
Government Printing Office (GPO) (7-4034)		
Surcharge on GPO Orders	35%	level I
Surcharge on GPO Orders	30%	level II
Surcharge on GPO Orders	25%	level III
Surcharge on Print Orders	3%	minimum
Copy Center (7-4034)		
Bound Book Copying	\$70.00	hour
8 1/2" x 11" Sheet, B&W	\$0.10	each
8 1/2" x 11" Sheet, Color	\$1.00	each
Transparencies, Color	\$3.00	each
Scan (7-4360)	\$1.75	each
Optical Character Recognition (OCR) (7-4360)	\$2.75	each
Micrographics (7-4360)		
16mm Duplication	\$30.00	roll
16mm Hard Copy (8 1/2" x 11")	\$0.60	each
35mm Camera/Film	\$3.25	each
35mm Duplication	\$0.85	each
35mm Hard Copy	\$2.50	each
Labor	\$40.00	hour
5080 Paper	\$2.10	linear ft.

(continued on following page)

Recharge Title	Rate	Units
5080 Vellum	\$2.80	linear ft.
5080 Drafting	\$2.90	linear ft.
Film Processing	\$10.75	roll
Jackets (setup)	\$9.00	each
Jackets/Fiche (duplication)	\$1.50	each
Jackets/Fiche (hard copy)	\$0.60	each
16mm Rotary Camera/Jackets	\$0.10	frame
16mm Magazine	\$4.00	each
PAGES (Print and Graphics Express Station)/CIC-17 (7-2905)		
QMS-Paper, Color	\$2.00	sheet
QMS-Transparency, Color	\$9.00	sheet
ILFORD-Paper, Color Photo	\$9.00	sheet
ILFORD-Transparency, Color Photo	\$18.00	sheet
Sheet B&W HSP	\$0.22	sheet
70# High Speed Print (HSP)	\$0.33	sheet
Novajet Glossy 36" x 88", Color	\$53.00	linear foot
Calcomp 36" x 88", B&W	\$14.00	linear foot
Fiche	\$46.00	sheet
35mm Film, Color Slides	\$13.00	frame
Video	\$9.00	frame
Highlight Color HSP	\$0.22	sheet
Digital Storage/compact disc	\$50.00	compact disc
Photography Services/CIC-9 (7-5123)		
Labor		
Professional Photographers	\$95.00	hour
Technician	\$58.00	hour
Passport Photo	\$20.00	set of 4
Prints		
8 1/2" x 11" Color (1 to 5)	\$19.50	each
8 1/2" x 11" Color (6 to 25)	\$13.00	each
8 1/2" x 11" B&W (1 to 5)	\$16.00	each
8 1/2" x 11" B&W (6 to 25)	\$11.00	each
Large Color Prints		
11" x 14"	\$35.00	each
16" x 20"	\$55.00	each
20" x 24"	\$85.00	each
30" x 40"	\$185.00	each
Large B&W Prints		
11" x 14"	\$22.00	each
16" x 20"	\$33.00	each
20" x 24"	\$50.00	each
30" x 40"	\$110.00	each
Transparencies		
Color Overheads (viewgraphs)	\$30.00	each
35mm Color Slides (mounted)		
From negative or artwork	\$7.50	each

(continued on following page)

Recharge Title	Rate	Units
Duplicate Slides	\$2.00	each
Copy Photography		
Negatives from flat art or transparency (color or B&W)		
Returned to Customer	\$14.00	each
Numbered and Filed	\$17.00	each
Photomechanical transfers (PMTs) (B&W only)		
Line Prints up to 11" x 14"	\$14.00	each
Line Prints up to 20" x 24"	\$17.00	each
Screens Prints up to 20" x 24"	\$17.00	each
Processing		
35mm color or B&W negative process with contact print	\$23.00	roll
35mm color slide process and mount	\$14.00	roll
35mm color negative process with 4" x 6" prints	call for price information	
Electronic Imaging Services/CIC-9 (7-5161)		
Labor		
Image Scanning from films or hardcopy	\$58.00	hour
Electronic Image Enhancement	\$58.00	hour
Image Database Searches	\$58.00	hour
Prints		
8 1/2" x 11" Color Dye Sublimation		
Custom prints per image file (1 to 5)	\$19.50	each
Custom prints per image file (6 to 25)	\$13.00	each
Standard prints	\$15.50	each
11" x 17" Color Dye Sublimation	\$35.00	each
Transparencies		
Overheads: Color or B&W Dye Sublimation/Custom	\$29.00	each
Overheads: Color or B&W Dye Sublimation/Standard	\$17.50	each
Solitaire Film Recorder 35mm slides	\$6.00	each
Phototypsetting and Imagesetting (800 to 3400 DPI)		
Paper	\$1.00	inch
Film	\$1.60	inch
Color Laser Copies		
8 1/2" x 11" Paper	\$1.25	each
11" x 17" Paper	\$2.50	each
Overheads	\$4.50	each

(continued on following page)

Recharge Title	Rate	Units
Video Production Services/CIC-9 (7-5161)		
Labor: writing, producing, directing, and A/V support	\$70.00	hour
Production Equipment (camera, tripod, lights, and microphones)		
Betacam SP video format	\$50.00	hour
HI-8, S-VHS, VHS video format	\$25.00	hour
Hycam high speed film camera	\$25.00	hour
Post-Production Systems		
Digital, non-linear editing	\$50.00	hour
Interformat editing	\$50.00	hour
Betacam SP off-line editing	\$50.00	hour
HI-8, S-VHS, VHS editing	\$25.00	hour
Video Teleconferencing Center/CIC-6 (5-3000)		
Conference Fee	\$281.00	on-air hour

Tips on Writing HTML <TABLE>s

If we are to judge emerging HyperText Markup Language (HTML) by the speed at which it is implemented, then the HTML <TABLE> tag is hot, very hot. It is already supported by a variety of browsers, the IETF HTML Working Group developed a W3C draft table specification as the first major extension to HTML 2.0, and the more you look around the Web, the more tables you see implemented.

Tables offer the major advantage of enabling you to arrange information horizontally on the screen as well as vertically. This can be used for traditional financial reports, statistical tables, etc., but it isn't limited to traditional rows and columns. The wide range of content that can be placed in tables allows valid constructions such as side by side lists, lists next to illustrations, and more.

The focus of this article is on constructing tables in ways that accommodate the older browsers that many people still use. The goal is to take advantage of the flexibility of tables without shutting out large portions of the Internet community.

With this scope in mind, the article does not address style issues such as alignment, borders, or widths.

General IA Guidance

The Information Architecture guideline IA-5815: Laboratory Standard HyperText Markup Language (HTML) defines acceptable HTML as HTML 2.0 plus selected HTML 2.x extensions. An extension from HTML 2.x is considered acceptable if it meets the following three tests:

- It is supported by more than one leading WWW browser (e.g., the latest versions of Netscape Navigator, NCSA Mosaic),
- It does not cause HTML 2.0-compliant browsers to lock up (e.g., Netscape 1.0N, NCSA 1.0, Lynx 2.3), and
- When the presentation on HTML 2.0-compliant browsers is not acceptable, an alternative presentation is made available (e.g., a <PRE> alternative for <TABLE> tags).

HTML <TABLE>s meet the first two tests. They are supported by Netscape Navigator 1.1 or higher, NCSA Mosaic 2.0 or higher, Microsoft Internet Explorer 2.0 or higher, and others. And older browsers do not lock up on tables; the tags are simply ignored.

The third test deals with how the tables are constructed. Frequently, the older browsers just see a jumbled line, in which case a link to an alternative text-only view needs to be provided.

The following HTML fragment lists several IA guidelines:

```
<table border>
<tr>
<th>Number</th>
<th>Title</th>
<th>Impact</th>
</tr>
<tr valign=top>
<td>IA-5307</td>
<td>Recommended User Interface Style Guides</td>
<td>Applications Developers and Support</td> </tr>
<tr valign=top>
<td>IA-5401</td>
<td>Laboratory Unclassified LAN Physical Architecture</td>
<td>Network Installation and Support</td> </tr>
</table>
```

With a tables-capable browser, the fragment is rendered as shown in Figure 1.

Number	Title	Impact
IA-5307	Recommended User Interface Style Guides	Applications Developers and Support
IA-5401	Laboratory Unclassified LAN Physical Architecture-Summary	Network Installation and Support

Figure 1. Table Viewed From Tables-Capable Browser

On an older browser, however, the rendering would be the unreadable mess shown in Figure 2.

```

Number Title Impact
IA-5307 Recommended User
Application Interface Style Guides Developers and
Support IA-5401 Laboratory Unclassified Network LAN
Physical Installation and Architecture-Summary Support

```

Figure 2. Table Viewed From Older Browser

<PRE> Is Not the Only Alternative

The most obvious way to accommodate older browsers is to provide a link to a <PRE>-formatted alternative, such as

```

<pre>
Number Title Impact
IA-5307 Recommended User Interface Style Guides Applications Developers and
Support
IA-5401 Laboratory Unclassified Network Installation and
Support
LAN Physical Architecture
</pre>

```

which would be rendered as shown in Figure 3.

Number	Title	Impact
IA-5307	Recommended User Interface Style Guides	Applications Developers and Support
IA-5401	Laboratory Unclassified Network LAN Physical Architecture	Installation and Support

Figure 3. Using <PRE> to Accommodate Older Browsers

This is a useful approach when the columns need to line up. It is not, however, the only alternative. Indeed, sometimes the best approach is to abandon the table design for the alternative and switch to something like a <DL> list as shown below.

```

<dl>
<dt>IA-5307
<dd>Title: Recommended User Interface Style Guides
<dd>Impact: Applications Developers and Support <dt>IA-5401
<dd>Title: Laboratory Unclassified LAN Physical Architecture
<dd>Impact: Network Installation and Support
</dl>

```

All HTML 2.0 compliant browsers would render an example similar to the one shown in Figure 4.

```

IA-5307
Title: Recommended User Interface Style Guides
Impact: Applications Developers and Support
IA-5401
Title: Laboratory Unclassified LAN Physical Architecture
Impact: Network Installation and Support

```

Figure 4. Using <DL> to Accommodate Older Browsers

This example shows that the same meaning that works well in a table can also be displayed in a different type of format for older browsers.

Alternatives Aren't Always Needed

The above examples presume that a link to a non-tables alternative version is presented for older browsers, but that is not the only approach. Sometimes it is easier (and equally appropriate) to simply build the table in such a way that it still appears meaningful regardless of which browser is viewing it.

For example, adding a
 at the end of a line will not affect the table but will cause a line break for older browsers. This way, at least each line of the table will appear by itself.

Another trick is to add extra space by inserting a non-breaking space () at the end of an entry.

Similarly, if hypertext links are used, these will cause the linked text to be displayed differently, thereby reinforcing the distinction between the different entries.

The following example roster takes advantage of the fact that we recognize elements like phone numbers and e-mail addresses by their format (which means that we do not need column headers):

```
<table>
<tr>
<td><a href="aarkin.html">Alan Arkin</a> &#160; </td>
<td>505-661-1234 &#160; </td>
<td><a href="mailto:aarkin@lanl.gov">
aarkin@lanl.gov</a><br></td>
</tr>
<tr>
<td><a href="lball.html">Lucille Ball</a> &#160; </td>
<td>505-661-3456 &#160; </td>
<td><a href="mailto:lball@lanl.gov">
lball@lanl.gov</a><br></td>
</tr>
<tr>
<td><a href="gburns.html">George Burns</a> &#160; </td>
<td>505-661-2345 &#160; </td>
<td><a href="mailto:gburns@lanl.gov">
gburns@lanl.gov</a><br></td>
</tr>
</table>
```

Note that the example makes use of all three of the tips presented above: the line breaks, non-breaking spaces, and links.

Tables-capable browsers would render this with all of the columns nicely lined up as shown in Figure 5.

Alan Arkin	505-661-1234	aarkin@lanl.gov
Lucille Ball	505-661-3456	lball@lanl.gov
George Burns	505-661-2345	gburns@lanl.gov

Figure 5. Roster as Viewed with Tables-Capable Browser

For older browsers, even though the columns don't line up, the same markup still yields meaningful results as shown in Figure 6.

Alan Arkin	505-661-1234	aarkin@lanl.gov
Lucille Ball	505-661-3456	lball@lanl.gov
George Burns	505-661-2345	gburns@lanl.gov

Figure 6. Roster as Viewed with Older Browser

In cases such as the above, where the table appears different but still acceptable on older browsers, there is no need to create a separate text-only option.

Consider Internal Headers, Lists, and Other Markup

Table cells are not restricted to single lines. They can contain internal markup which older browsers can also read, even if they overlook the table itself.

Internal markup offers a good way to set lists side by side. This often makes better use of screen real estate and, if headers for each list are used, automatically formats well regardless of the browser.

The following markup is from a list of meeting minutes:

```
<tr valign=top><td>
<h3>1995</h3>
<dl>
<dt><a href="da950503.html">May 3, 1995</a> <dt><a
href="da950417.html">April 17, 1995</a> <dt><a
href="da950329.html">March 29, 1995</a> <dt><a
href="da950301.html">March 1, 1995</a> <dt><a
href="da950215.html">February 15, 1995</a> <dt><a
href="da950201.html">February 1, 1995</a> <dt><a
href="da950118.html">January 18, 1995</a> <dt><a
href="da950104.html">January 4, 1995</a> </dl>
</td><td>
<h3>1994</h3>
<dl>
<dt><a href="da941214.html">December 14, 1994</a>
<dt><a href="da941207.html">December 7, 1994</a> <dt><a
href="da941130.html">November 30, 1994</a> <dt><a
href="da941019.html">October 19, 1994</a> <dt><a
href="da941012.html">October 12, 1994</a> <dt><a
href="da941005.html">October 5, 1994</a> <dt><a
href="da940920.html">September 20, 1994</a> </dl>
</td></tr></table>
```

On a tables-capable browser, the lists are rendered side by side as shown in Figure 7.

1995	1994
May 3, 1995	December 14, 1994
April 17, 1995	December 7, 1994
March 29, 1995	November 30, 1994
March 1, 1995	October 19, 1994
February 15, 1995	October 12, 1994
February 1, 1995	October 5, 1994
January 18, 1995	September 20, 1994
January 4, 1995	

Figure 7. Two-Column Table Using Tables-Capable Browser

On an older browser, the table tags are ignored but the other markup is read, as shown in Figure 8. It's not quite as good as the table version, but it's legible and acceptable.

1995

May 3, 1995

April 17, 1995

March 29, 1995

March 1, 1995

February 15, 1995

February 1, 1995

January 18, 1995

January 4, 1995

1994

December 14, 1994

December 7, 1994

November 30, 1994

October 19, 1994

October 12, 1994

October 5, 1994

September 20, 1994

Figure 8. One-Column Table Using Older Browser

Conclusion

The <TABLE> tag offers numerous possibilities for improving the way that information is displayed on the Web. When used with care, it can also be used without interfering with the older browsers that many still use. The older browsers won't get the full effect, but they'll still work fine.

Tad Lane, tad@lanl.gov, (505) 667-0886
Communications Arts and Services Group (CIC-1)

How to Point the Eudora Finger in the Right Direction

The finger command is a powerful utility. It allows the user to quickly see who is who on different machines. It gives the user full names, telephone numbers, e-mail addresses, and more for the person in question. VMS and UNIX users have taken advantage of finger for a long time. They just sat at their terminals and fingered their colleagues whenever they felt like it and as many times as they wished. Microcomputer users were not as fortunate. They had to run special programs every time they wanted to finger. They had to go find the program, start it up, finger, and then quit the program. There was little “at the drop of a hat” fingering for microcomputer users. But multitasking fixed all of that! Now, through several utilities, Eudora being the main player, microcomputer users can finger just like the big Cray users—whenever and as many times as tickles their fancy.

Many of the microcomputer users here at LANL (and indeed the world) are running Qualcomm’s Eudora. This package runs on both Macintosh and PC platforms. It is usually started when the machine is booting and allowed to run unnoticed until the familiar sing-song tone alerts the user of incoming mail. What many people do not know is that in addition to e-mail, Eudora also has a finger command. Since Eudora is usually running at all times, this command is accessible at the touch of a finger!

First, make sure Eudora is configured correctly. Due to recent ICN changes, many of the older configurations of Eudora are incorrect. Under the Special pull-down menu, pick Settings. Make sure you have your correct POP e-mail address.

Your SMTP server will normally be mailhost.lanl.gov. Both the finger and ph (ph for phone, a type of finger that produces a longer, more detailed output) need to point to lanl.gov, not mailhost.lanl.gov (the two machines used to be the same, but no more). Figure 1 shows the proper configuration for a user with a POP account on beasley.lanl.gov.

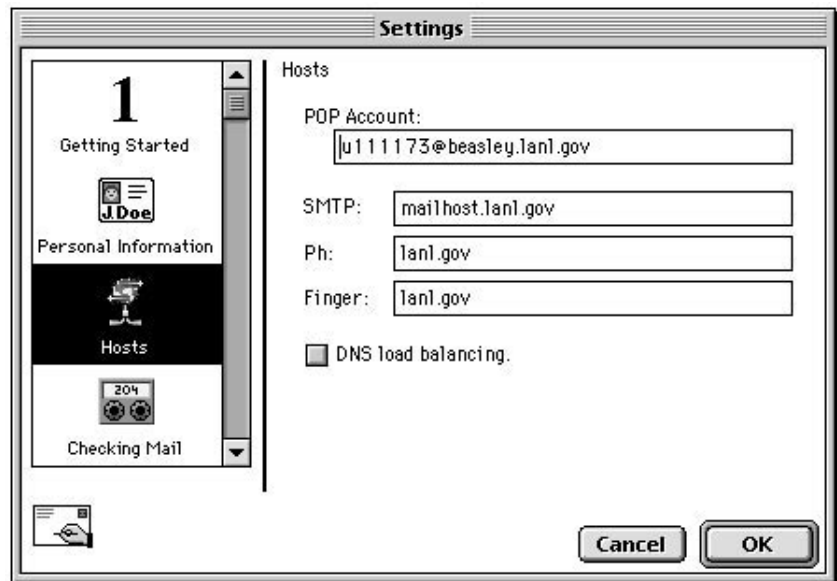


Figure 1: The Settings Window for Eudora (Macintosh)

Once configured, the user can call the Ph command from under the Windows pull-down menu (or use a control-U). Eudora opens up a window that can be used to finger (see Figure 2).

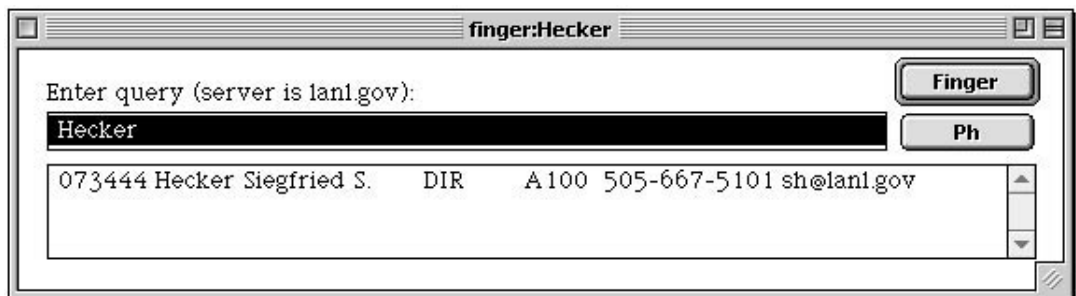


Figure 2: The Finger Window for Eudora.

The user can now enter names, Z-numbers, or e-mail addresses to initiate a search. In the Figure 2 example we have looked up Sig Hecker via his last name. Finger returned his Z-number, full name, division, mail stop, telephone number, and e-mail address. We could have also fingered him as "073444" or "sh@lanl.gov".

The Phone command (Ph) is just a long finger. As you can see in Figure 3, the output is more complete and neater.

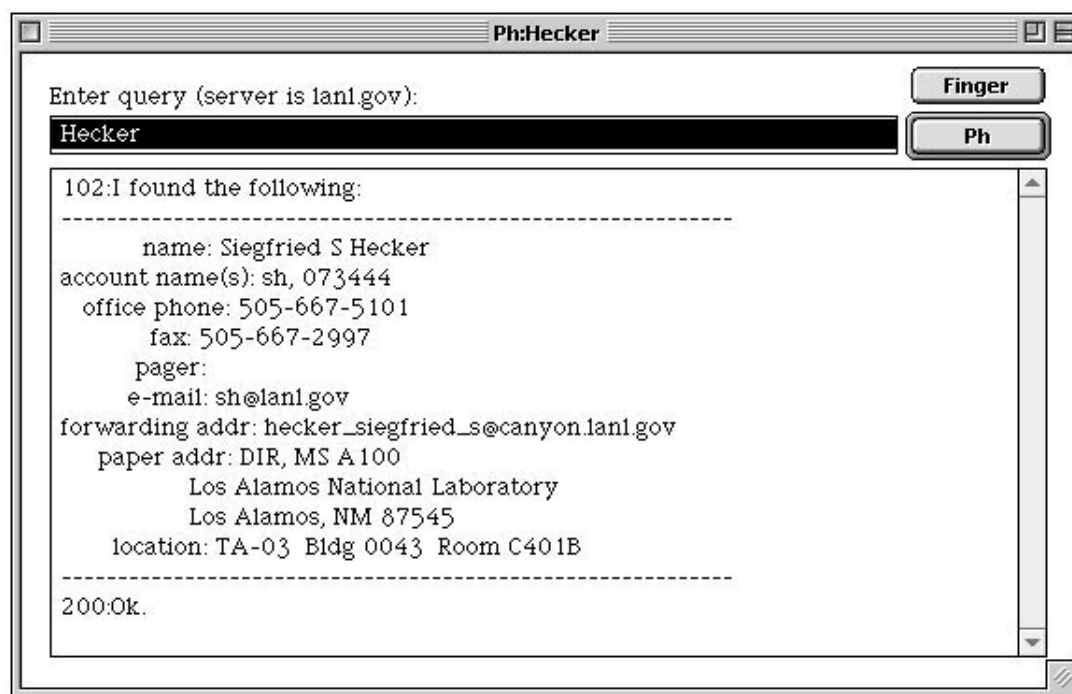


Figure 3: The Ph Window for Eudora.

Several words of advice when using finger on Eudora. First, be sure the ph and finger settings in the hosts configuration point to lanl.gov and not mailhost.lanl.gov. They are not the same machine. Next, try fingering "help@lanl.gov" for a plethora of ways to custom-tailor your finger searches. Lastly, finger does accept the use of wildcards (*, etc.) but please use them sparingly. A finger to "*.lanl.gov" can slow down a system tremendously.

Dale Hugo Leschnitzer
ICN Consulting Office, CIC-6

Web Browsers and Helper Applications

No Web browser can do it all. Even once upon a time, when there was only text on the Internet, there were still a lot of protocols flying around: FTP (File Transfer Protocol), TELNET (terminal connections), SNMP (mail protocol), Usenet news groups, etc. With the need for other means of Internet communication (graphics, sound, video, ...) text-based applications gave way to Gopher, and then to Web browsers, of which Netscape is now the most popular. To manage all these file formats, Web browsers use a pantheon of helper applications that are automatically launched to handle specific types of files.

A helper application might just handle a certain type of sound file, for instance. When you click on a sound file on a Web page, the file is downloaded to your computer and an appropriate helper application is launched to play the audio. Your Web browser detects what kind of file you clicked on by the file's two, three, or four letter extension (.au, .wav, or .snd, for instance).

Brother Can You Spare a MIME?

These file types are regulated by the MIME standard, which stands for "Multipurpose Internet Mail Extensions." It allows images, audio files, multimedia, and many other types of binary data to be transmitted over the Internet's mail system. These binary files are encoded using what is called Base64 encoding and then "piggybacked" on top of text-based, e-mail messages.

The MIME standard specifies standard Content Types and Subtypes for files. These are specified in Type/Subtype pairs, such as text/plain, application/pdf, application/mac-binhex40, image/gif, audio/basic, and video/mpeg, to name a few. For each Type/Subtype specification, there is at least one suffix specifically associated with it, such as .tiff and .tif for the image/tiff graphic standard. (The three letter suffixes are added for the DOS limitation of three letters after the dot.) So when a Web browser looks at a file, it checks its MIME-based extension to determine the format of the file.

How to specify Helper Applications

In Netscape, you can see what helper applications are set up for use by selecting the Preferences... option under the Options menu. Once there, select the Helper Applications

selection from the pull-down menu at the top of the dialog box. In Figure 1 we see some image types that are not used on a Mac and do not have a helper application set up for them. Netscape, however, comes preconfigured to use the most common helper applications, even if you do not have them installed on your computer.

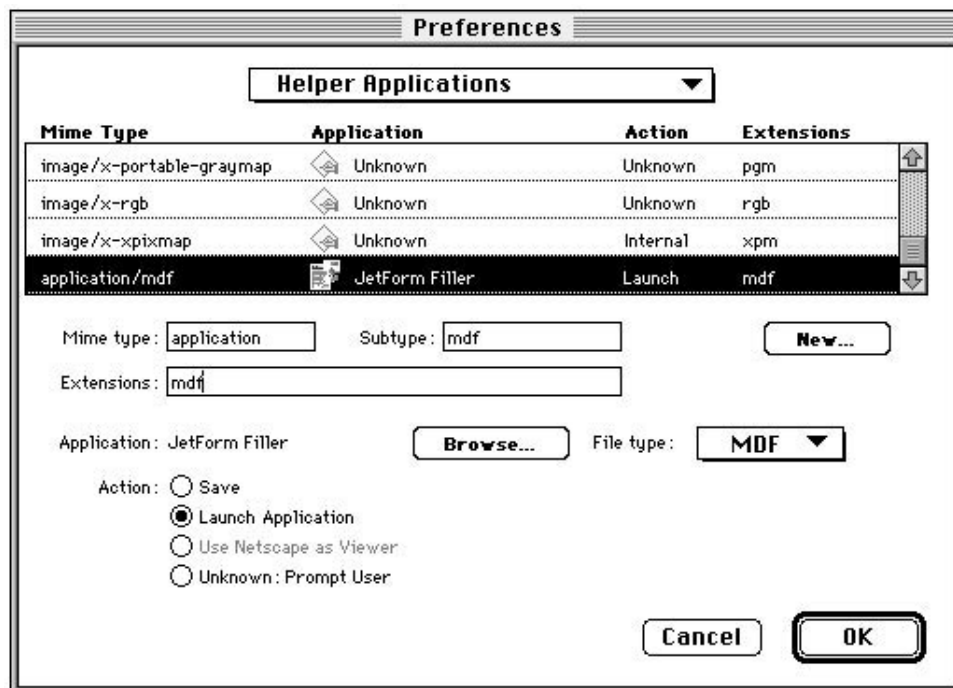


Figure 1. Netscape's Helper Application Configuration Window

But what if you do not have the correct helper application configured in your Web browser? Let's say you go to the On-line Forms section of the LANL Web server and click on one of their on-line forms. (To access "On-line Forms" from the LANL home page, click on "Info by Subject" and then on the "On-line Forms" link under the "Business Information Systems" (CIC-13) section.) These forms use the form viewer application called Jetform Filler and use the suffix .mdf. Since you do not have the Jetform Filler helper application configured on your computer, Netscape will give you the message shown in Figure 2.

To configure the helper application, simply click on the "Pick Application" button, find the Jetform Filler application, and tell Netscape to use that application for the type of file (.mdf) that it has just encountered. If you look at the helper applications configuration window in Preferences, you will see the new entry listed. However, the "Extensions:" entry will be blank so it helps to manually enter the extension (.mdf in this case). On rare occasions, having this entry helps Netscape to

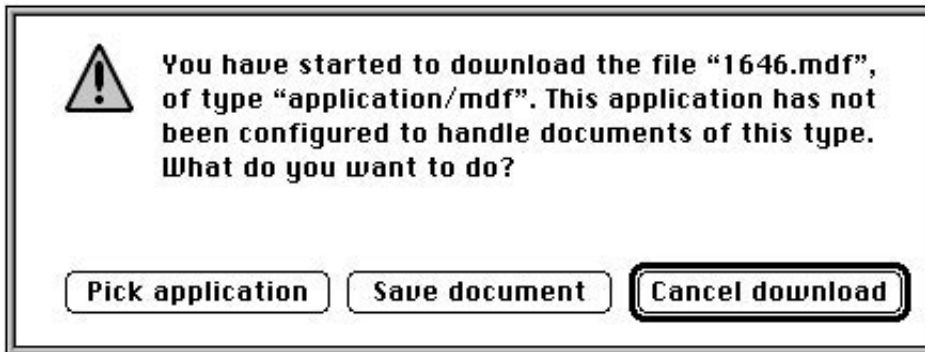


Figure 2. Dialog Box for Improper Helper Application Configuration

know the correct helper application to launch. (You can obtain Jetform Filler by selecting "Information by Subject" from the LANL home page and then clicking on the "Electronic Software Distribution" selection.)

You can also manually select the action you wish Netscape to perform. You can select "Unknown, Prompt User" if you want to be asked what to do each time you click on a certain type of file or select "Save" if you want to always save a certain type of file to disk. (You may not have a helper application for that type of file, for instance.)

Also note that there is no way to erase a helper application entry once you create one in Netscape. However, you can enter blanks in the Subtype and Extensions and then select "Unknown: Prompt User" to disable the entry.

Where to Find Helper Applications

Getting all the helper applications you need and keeping them current can take a bit of time. The best place to look is right off the Netscape Home Page (select "Netscape's Home" from under the Directory menu in Netscape or use the following URL: <http://home.netscape.com/>). At the bottom of the page, you will see a link called "Helper Apps" under the "Assistance" heading. From there you can pick your computer's flavor: Macintosh, Windows, or UNIX. You will also see the helper applications divided up by their category: Graphics, Audio, Telnet, etc. Even if one application in a category is the most commonly used, another lesser known application may have its advantages. The limiting factor is usually the amount of time you have to mess with such things.

In Conclusion

Things do not always work smoothly. Often times you will get something like the following when trying to download a file:

```
-----_-1399727801==_-----
```

```
Content-Type: application/mac-binhex40;
name="GIFConverter_2.3.7_f.sit"
```

```
Content-Disposition: attachment;
filename="GIFConverter_2.3.7_f.sit"
```

(This file must be converted with BinHex 4.0)

```
:%G*4N0[ERCPFR4PFL!b,M-
Z0b$%,ROTG!"6594%8dP8)3%!!!@CZ!!!!#0PP0
```

In this case the Web browser did not properly decode the file. You could select Save As under File and save the file as a text file. In this example, on the Mac, you would then drag that text file on top of the StuffIt Expander utility. (The PC has BinHex utilities available, although it mainly uses the .zip compression.)

This is just one example of MIME going awry. You also see this type of thing with attachments to e-mail messages, where you get to glimpse the workings of MIME, which usually go smoothly and unnoticed.

Finally, helper applications can be fun. (At least at first.) Downloading that first sound file always spawns a wow. But be advised that sound, graphic, and especially video files can take a long time to download, especially over a SLIP connection. After the novelty has worn off, however, you'll find helper applications like Adobe Acrobat (.pdf) indispensable.

For help with configuring helper applications, call the CIC-2 help desk at 667-HELP (7-4357) or explore the many excellent help files at the bottom of the Netscape home page.

John Layne, jpl@lanl.gov, (505) 665-5090
Desktop Group (CIC-2)

Introducing the Cluster Web Pages

The Web pages covering the Open and Secure clusters of workstations are very comprehensive and frequently updated. Rather than include lots of details in this BITS article, we invite you to browse our Web pages.

- Cluster Home Page: <http://cluster.lanl.gov>

The pages are organized with the home page containing information common to both clusters. Links from there lead to main pages for both the Open cluster of IBM workstations (<http://cluster.lanl.gov/ONCS/index.html>) and the Secure cluster of HP workstations (<http://cluster.lanl.gov/SNCS/index.html>). These two Web pages, shown on pages 19 and 20, indicate the type of information included. We suggest you return periodically to these pages at least to look at the "Configuration Changes" sections for both clusters. These sections include long-range plans, change-control announcements, and records of recent changes.

Cluster Change Control Announcements through the Web

Information on Change Control for both clusters is now available exclusively through the Web. Links leading to the Open and Secure Change Control pages are on the Web pages shown on pages 19 and 20, as well as on the main Change Control Web pages. URLs for these pages are shown below.

- Change Control for the Open Cluster:
<http://cluster.lanl.gov/ONCS/CC/cc.html>
- Change Control for the Secure Cluster:
<http://cluster.lanl.gov/SNCS/CC/cc.html>

Change Control Policy for the Clusters

1. The intent of this Change Control Policy is to define procedures to maximize the predictable consequences of making changes to the clusters and still allow for continual improvement of services in a way that protects the integrity of users' data and minimizes the disruption of services.

2. To uphold predictability of the clusters, we will adhere to the following schedule when making changes (except in emergency situations as described in number 4):

- Wednesday mornings: Simple software installations and upgrades.
- Wednesday evenings: Major system reconfigurations or other activities that require taking the systems down for a long period of time.

3. All scheduled changes will be announced in the Change Control Web pages at least one week in advance. Whenever possible, pre-installation versions of new software will be available for user testing prior to installation. (The availability of these test versions will be included in the Web page announcements.)

4. The notable exception to this Change Control Policy is that corrective actions will be performed as needed in emergency situations. For example, hardware failures will be corrected when they occur. Also, immediate corrective action will be taken when software is obviously bad or is determined to pose a security threat.

5. A record of changes that have been made in the recent past (approximately the past 30 days) will be retained. This includes changes to cover emergency situations and other unscheduled events.

Stephany Bouchier, scb@lanl.gov, (505) 667-8266
Distributed Computing Group (CIC-8)

Netscape: OpenNCS - Open Network Compute Server

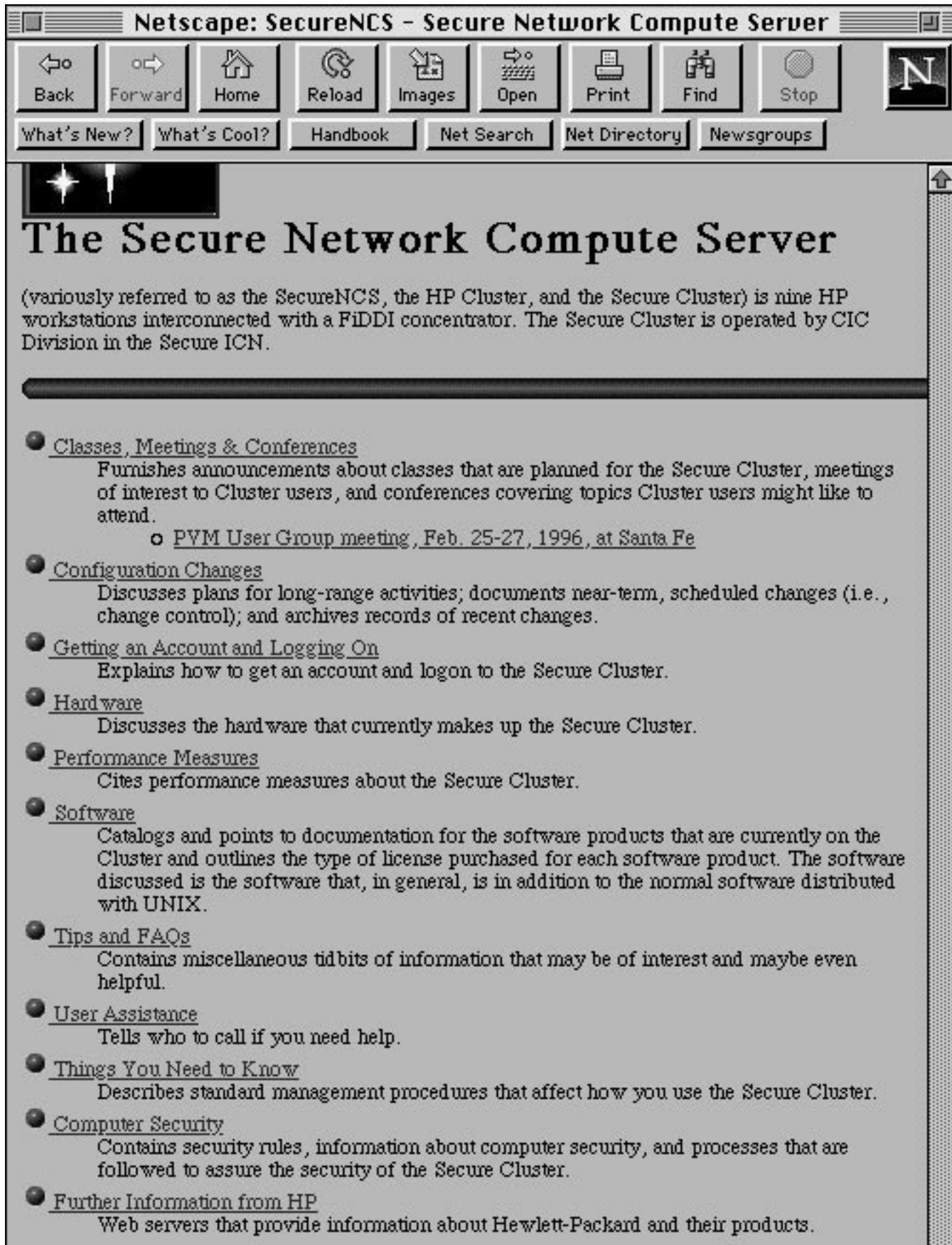
Back Forward Home Reload Images Open Print Find Stop

What's New? What's Cool? Handbook Net Search Net Directory Newsgroups

The Open Network Compute Server

(variously referred to as the OpenNCS, the IBM Cluster, and the Open Cluster) is eight IBM workstations that are interconnected with a DEC GIGAswitch. The OpenNCS is operated by CIC Division in the Open ICN.

- [Classes, Meetings & Conferences](#)
Furnishes announcements about classes that are planned for the Open Cluster, meetings of interest to Cluster users, and conferences covering topics Cluster users might like to attend.
 - [Parallel Programming Workshop for the PowerParallel \(SP2\) system.](#)
 - [PVM User Group meeting, February 25-27, 1996, at Santa Fe.](#)
 - [SHARE Meeting, March 4-8, 1996, at Anaheim.](#)
- [Configuration Changes](#)
Discusses plans for long-range activities; documents near-term, scheduled changes (i.e., change control); and archives records of recent changes.
- [Getting an Account and Logging On](#)
Explains how to get an account and logon to the Cluster.
- [Hardware](#)
Discusses the hardware that currently makes up the Cluster.
- [Performance Measures](#)
Cites performance measures and papers about the Cluster and its use.
- [Software](#)
Catalogs and points to documentation for the software products that are currently on the Cluster and outlines the type of license purchased for each software product. The software discussed is the software that, in general, is in addition to the normal software distributed with UNIX.
- [Tips and FAQs](#)
Contains miscellaneous tidbits of information that may be of interest and maybe even helpful.
- [User Assistance](#)
Tells who to call if you need help.
- [Things You Need to Know](#)
Describes standard management procedures that affect how you use the Cluster.
- [Computer Security](#)
Contains security rules, information about computer security, and processes that are followed to assure the security of the Open Cluster.
- [IBM Web Servers](#)
Accesses information from IBM on their products and services.



Netscape: SecureNCS - Secure Network Compute Server

Back Forward Home Reload Images Open Print Find Stop

What's New? What's Cool? Handbook Net Search Net Directory Newsgroups

The Secure Network Compute Server

(variously referred to as the SecureNCS, the HP Cluster, and the Secure Cluster) is nine HP workstations interconnected with a FIDDI concentrator. The Secure Cluster is operated by CIC Division in the Secure ICN.

- [Classes, Meetings & Conferences](#)
Furnishes announcements about classes that are planned for the Secure Cluster, meetings of interest to Cluster users, and conferences covering topics Cluster users might like to attend.
 - [PVM User Group meeting, Feb. 25-27, 1996, at Santa Fe](#)
- [Configuration Changes](#)
Discusses plans for long-range activities; documents near-term, scheduled changes (i.e., change control); and archives records of recent changes.
- [Getting an Account and Logging On](#)
Explains how to get an account and logon to the Secure Cluster.
- [Hardware](#)
Discusses the hardware that currently makes up the Secure Cluster.
- [Performance Measures](#)
Cites performance measures about the Secure Cluster.
- [Software](#)
Catalogs and points to documentation for the software products that are currently on the Cluster and outlines the type of license purchased for each software product. The software discussed is the software that, in general, is in addition to the normal software distributed with UNIX.
- [Tips and FAQs](#)
Contains miscellaneous tidbits of information that may be of interest and maybe even helpful.
- [User Assistance](#)
Tells who to call if you need help.
- [Things You Need to Know](#)
Describes standard management procedures that affect how you use the Secure Cluster.
- [Computer Security](#)
Contains security rules, information about computer security, and processes that are followed to assure the security of the Secure Cluster.
- [Further Information from HP](#)
Web servers that provide information about Hewlett-Packard and their products.

CIC Computing Classes

CIC offers a variety of computing courses for the professional development of Laboratory employees. The courses listed in Table 1 will meet at the time and the date shown. The date for courses in Table 2 are not known at this time.

☐
☐

Table 1 Courses with confirmed time and date

COURSE TITLE	INSTRUCTOR	COST	DATES
Parallel Programming Workshop for SP2 System	Hari Reddi, IBM	\$1400-\$1700 (depending on enrollment)	2/26/96 through 3/1/96
SUN Solaris 2.X System Administration	John Nouveaux, Sun Microsystems	\$1750-\$2000 (depending on enrollment)	2/26/96 through 3/1/96

Course Registration

To register: (1) check the box beside the appropriate course, (2) complete the Enrollment Information section below, and (3) follow the mailing instructions on the back of this form. Submittal of a Course Registration form does not guarantee participation in an advertised class, but it is the only way to get into the queue for notification of upcoming classes. Classes are conducted in a secure area unless noted; uncleared participants require escorts. Call the Vendor Training Coordinator at 667-9399 for more information.

☐
☐
☐
☐

Table 2 Courses with date to be arranged (TBA)

COURSE TITLE	INSTRUCTOR	COST	DATES
C Programming (Beginning)	Michael Chase, Boulder Software Group	\$780-\$1100 (depending on enrollment)	TBA
C Programming (Advanced)	Boulder Software Group	\$780-\$1150 (depending on enrollment)	TBA (5-day class)
SUN Solaris 1.X (SunOS 4.X) Advanced System Administration	Sun Microsystems Expert	\$1750-\$2000 (depending on enrollment)	TBA (4.5-day class)
UNIX (Beginning)	Ted Spitzmiller & Jeffrey Johnson	\$738	TBA (morning only)

Note: Detailed course descriptions for most classes provided on the following pages.

Enrollment Information

Name _____

Phone _____ Z-Number _____

Group _____ Mail Stop _____

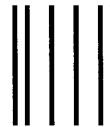
Program Code* _____ Cost Code* _____

Group Leader Signature _____

***Enter program code and cost code for all courses. If you need to withdraw from a class fewer than 5 working days before the class is scheduled to begin, your group will still be charged. Substitutes may be sent, but please let the CIC Division Training, Development, and Coordination Office (667-9399) know who your substitute will be.**

cut along dashed line

Do Not Staple
Fold on This Line First



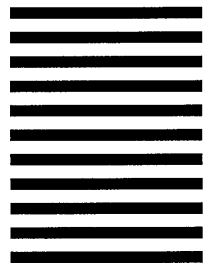
NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 88 LOS ALAMOS NM

POSTAGE WILL BE PAID BY THE ADDRESSEE

MAIL STOP B296
CIC DIVISION TRAINING DEVELOPMENT
AND COORDINATION TEAM
LOS ALAMOS NATIONAL LABORATORY
PO BOX 1663
LOS ALAMOS NM 87544-9916



Do Not Staple, Seal with Tape
Fold Here

C Programming (Beginning)

Prerequisite: An understanding of the useful skills in a high-level programming language. A current ICN password is required.

Location: CIC-Division Classroom, TA-3, SM-200, Room 210 (secure area).

Enrollment: Minimum 10, Maximum 16.

Topics: Introduction and Fundamentals; Basic Semantic Constructs—Getting Started; Base Level I/O with C; The Preprocess-Compilation Environment; Operators, Data Types, and Storage Classes; Control Flow Constructs; Conditional Constructs; Higher-Level Data Constructs in C; File I/O; UNIX Software Tools; and POSIX System Calls.

C Programming (Advanced)

Prerequisite: Useful skills and experience with the C Programming language.

Location: CIC-Division Classroom, TA-3, SM-200, Room 210 (secure area).

Enrollment: Minimum 10, Maximum 16.

Topics: Data Structures, Algorithms, and OOP; An Advanced Clinic for C Programmers; The ANSI C Recommendation X3.159; C and ANSI C War Stories; The Data Structure and the Assessment of Algorithms; Arrays; Structures; Unions; Stacks; Queues; Linked Lists; Recursive Functions; Binary Trees; Hashing; File Organizations Using the C Runtime Library; Standard Interprocess Communication Mechanisms; An Introduction and Overview of AT&T's C++ 3.0; and Appendix: references for periodicals, journals and texts.

Parallel Programming Workshop for SP2 System

Prerequisite: No prior knowledge of parallel programming required; some development experience in UNIX and in at least one of Fortran, C, or C++ is required.

Location: CIC-CTI Classroom; TA-3, SM-200, Room 115.

Enrollment: Minimum 10, Maximum 16.

Topics: Introduction to Parallel Programming (Definitions, Parallel Architectures and Algorithms, Parallel Programming Approaches, Program Partitioning and Mapping, Important Issues, Applications); SP2 System Overview; SP2 Parallel Environment (Overview, Compilers, Resource Management - partition manager, Parallel Program Visualization, Profiling Parallel Programs, Message Passing Library (MPL)); Parallel Virtual Machine Extended (PVMe); Parallel Programming Workshop (predetermined labs of varying difficulty; in language of choice); and Optional Topics (Parallel Databases, Parallel I/O).

UNIX (Beginning)

Prerequisite: Familiarity with a UNIX workstation.

Location: CIC-Division Classroom, TA-3, SM-200, Room 210 (secure area).

Enrollment: Minimum 8, Maximum 10.

Topics: Overview of the Workstation environment; Getting Started; The UNIX File System; Manipulating Files; Customizing Your Environment; The C-Shell; Editing and Writing with vi; Using the Network; Discussing NFS and NIS; Using basic system status commands; Startup and shutdown procedures; Using tar.

Lab-Wide Systems Training

The Customer Service Group (CIC-6) offers training for users of Laboratory information systems. The CIC-6 courses offer training for a variety of personnel including property administrators, group secretaries, training coordinators, budget analysts, group leaders, or anyone needing to access training records, property records, costs, employee information, travel, chemical inventories, etc. Refer to the table below and on the following pages for specific information about courses currently offered.

Course Registration

You must have a valid ICN password before taking any of the courses shown in the table. To register for a course, call CIC-6 Training, Development, and Coordination section at 667-9444. You will be sent a registration form to be completed and returned.

Course Title	Date	Time	Cost	Course Number
Administrative ToolKit	2/2/96	8:30 - 12:00	\$260	Course #11395
A combination of the Directory Information, Signature Authority, TRIPS, and STORES system classes. The student will learn how to update directory information, assign signature authorities (purchase, SIGMA, etc.), submit travel requests, and purchase materials on-line. Reporting and printing for each system will also be covered.				
Automated Chemical Inventory System (ACIS):	Scheduled Upon Request		\$260	Course #7480
Participants receive hands-on instruction to update the status (end-user, location, quantity) of chemical containers. Participants will also learn to generate chemical inventory reports by chemical name, end-user, location, and organization.				
Budget Computing System (BUCS):	Scheduled Upon Request		\$260	Course #3527
This training is an introduction to the Budget Computing System (BUCS). Students practice generating "quick reports" and reports requiring parameter files. An introduction and demonstration of (no "hands-on") allocating procedures are given during the three-hour session.				
Employee Development System - Basic Training (EDS I):	2/14/96	8:30 - 12:00	\$260	Course #5289
The course provides hands-on instruction to request course enrollment, use the on-line course catalog, retrieve training transcripts, and assign EDS authorities. The student will learn to create courses, add students to the courses, and generate several training reports.				
Employee Development System - Training Plans (EDS II):	2/28/96	8:30 - 12:00	\$260	Course #7155
Participants receive hands-on instruction to create and maintain training plans, assign assignment codes, and generate training plan reports. Attendees must have prior training in the Employee Development System (course #5289).				
Eudora Electronic Mail	2/13/96	8:30 - 10:30	\$130	Course #9762
This class is a hands-on class that teaches the participant how to use Eudora software to create, send, receive, and edit electronic mail messages. In addition to these procedures, the participant will learn what related settings mean and how to configure the system to meet his or her individual needs.				
Financial Reporting System	2/9/96	8:30 - 11:30	\$260	Course #11050
Students will receive hands-on training to generate standard financial reports and make on-line queries from information in the "data warehouse," a collection of data from Laboratory budgeting, accounting, and time-keeping systems.				

Course Title	Date	Time	Cost	Course Number
Financial Management Information System (FMIS):	3/26/96	8:30-12:00	\$260	Course #8338
Participants receive hands-on instruction to “explode” and “transfer” through the costs, allocations, and outstanding commitments screens. In addition, participants will create/review reports, access the Information Manager Utility for printing reports, and learn how to assign authorities in the system.				
HTML Basics	2/15/96	8:30 – 12:00	\$260	Course #11605
Students will gain a basic understanding of HTML (Hypertext Markup Language), the language for the World Wide Web. Topics covered will be commands and standards, creating and editing documents, and authoring programs.				
Introduction to the Internet: Beginning Netscape	2/27/96	8:30 – 10:30	\$130	Course #10961
Students gain basic understanding of the Internet and the World Wide Web and the use of Netscape as a browser to surf the Net. Topics covered are both Laboratory sites and open sites, along with practical uses of the Internet.				
Key/Core System	3/22/96	8:30 – 10:30	\$130	Course #10179
Key custodians and alternate key custodians receive hands-on instruction to add, update, and delete key and padlock information, and view assignment information and request reports. Students will also learn how to request key inventory notifications. Students must be a key custodian or alternate and have an ICN password.				
Lotus Notes Basic Concepts	Scheduled Upon Request		\$260	Course #9917
This class provides hands-on instruction for Mac and PC users to use Lotus Notes software to create and send E-mail memos; fax documents; search databases; create filters, nicknames, banners, and doclinks; set defaults; and use multiple address books. In addition, participants learn how to use the memo, meetings, and discussion databases.				
On-Line Forms	2/27/96	10:30 – 12:00	\$130	Course #9756
Participants will learn to use Netscape software to access Lab-wide information and forms. Using Jetform Filler software, participants will access, complete, and print forms such as the “ICN Validation Request,” “Visitor Request for Unclassified Visits to Security Areas,” and “Request for Quotation.”				
Property Accounting, Inventory, and Reporting System (Advanced)	Scheduled upon request		\$260	Course #9918
This course will include a refresher of PAIRS, advanced techniques and tips, explanation of the notification system, and report capabilities. Swap Shop, Loan Out information, and support tables will be discussed. Participants should already have a basic understanding of and know how to use PAIRS.				
Reporting with Infomaker	2/5/96 - 2/6/96	8:30 – 5:00	\$560	Course #11054
Hands-on training to query data and develop ad hoc, or non-standard, reports from the LANL data warehouse using Infomaker software.				
Secretarial/Contract Services (SE):	Scheduled upon request		\$260	Course #7481
This class provides hands-on instruction for creating secretarial requests for temporary services, entering time for technical and nontechnical contract employees, and creating reports using the Information Manager Utility. The students will also learn how to review notifications and approve attendance. A training database will be used for the class.				

Course Title	Date	Time	Cost	Course Number
Time and Effort System	3/5/96	8:30 – 12:00	\$260	Course #11018
The student will learn how to enter attendance, amend attendance, approve attendance, and submit exception and approval reports. Time codes and associated policies will also be discussed. In addition, the student will learn how to use the Information Manager utility to view and print reports.				

Research Library Training

The LANL Research Library provides training for using its specialized databases. Training sessions begin at times indicated below. Classes are scheduled for half an hour, except for “Information Sources on the Internet via WWW” which is two hours. Space is limited to 8 per session. Classes are free, but you must pre-register by calling the Research Desk at 7-5809 or sending e-mail to library@lanl.gov. Special classes and orientations can also be arranged.

Date	Time	Subject Matter
2-1-96	10:00 a.m.	Information Sources on the Internet via WWW
2-6-96	1:00 p.m.	New Employee Orientation/Research Library Overview
2-14-96	11:00 a.m.	MELVYL (University of CA specialized databases)
2-15-96	1:00 p.m.	LA Unclassified Publications Database
2-15-96	2:00 p.m.	Information Sources on the Internet via WWW
2-20-96	1:00 p.m.	ABI Inform Business Database
2-22-96	1:00 p.m.	Energy Database
2-29-96	1:00 p.m.	SciSearch on the WWW

INTEGRATED COMPUTING NETWORK (ICN) VALIDATION REQUEST

To access ICN Computing resources, please complete all parts of this form that apply to you, including "Special Requirements."

If you have questions:

Call: (505) 665-1805
E-mail: validate@lanl.gov

Mail your completed application to:

ICN Password Office (PWO)
Mail Stop: B271
Los Alamos National Laboratory
Los Alamos, NM 87545

All Laboratory computers, computing systems, and their associated communication systems are for official business only. By completing this request, users agree not to misuse the ICN. The Laboratory has the responsibility and authority to periodically audit user files.

Owner Information

Z-Number (if you have one)	PWO Use Only	Name (last, first, middle initial)	
LANL Group	LANL Mail Stop	Citizenship (Foreign National see "Special Requirements-Foreign National")	
Phone Number	Cost Center	Program Code	

<p>Check LANL affiliation:</p> <p><input type="checkbox"/> LANL employee</p> <p><input type="checkbox"/> Contractor _____ (specify contract company)</p> <p><input type="checkbox"/> Consultant, VSM, associate</p> <p><input type="checkbox"/> External user _____ (specify employer)</p> <p><input type="checkbox"/> Other (specify) _____</p>	<p>Send password / smartcard to:</p> <p><input type="checkbox"/> Mail Stop or <input type="checkbox"/> Mail to address indicated below</p> <p>Name / Organization _____</p> <p>Address _____</p> <p>City, State, Zip Code _____</p>
--	---

Access Check access method and needed partitions:

Access method:	<input type="checkbox"/> ICN Password	<input type="checkbox"/> Smartcard	<input type="checkbox"/> Both
<input type="checkbox"/> Open partition (e.g., email systems, open machines)			
<input type="checkbox"/> Administrative partition (e.g., IA [BUCS, Stores, Travel], IB [EIS, FMIS, PAIRS]) If you are not a Q-cleared LANL employee, see required steps in section "Special Requirements-Administrative Partition," unless you already have Administrative access with an ICN password.			
<input type="checkbox"/> Secure partition (i.e., secure machines) Indicate level(s) of data to be processed: <input type="checkbox"/> Unclassified <input type="checkbox"/> Secret		I certify this person does require secure access: Manager Signature _____ (Group Leader or above) _____ Date _____	
NOTE: A Q-clearance is required. All classified computing must be performed within the Secure environment.			

PWO Use Only

New <input type="checkbox"/>	Change <input type="checkbox"/>	Clearance Status	Processed	Lv	Smartcard Serial #
Comments:					

Special Requirements

Administrative Partition

(U.S. Citizens Only)

Lab-Wide Systems (e.g., IA [BUCS, Stores, Travel], IB [EIS, FMIS, PAIRS])

☐ Under 18
years of age

If you need to access Administrative systems, your group leader must provide a memo accepting responsibility for your actions and justifying your need for access. This memo is to accompany all forms taken to the security briefing (see "Contractor or Non-Q-Cleared") section below. You may not access the Secure Partition.

☐ Contractor or
Non-Q-Cleared

Phone (505) 667-9444 to obtain Access Authorization packet.

Phone (505) 667-9153 to schedule a security briefing.

Bring all forms including this ICN Validation Request to the security briefing for approval.

Security Briefing Approval Signature

Date

☐ Foreign National

Attach a copy of Form 982 (REQUEST FOR UNCLASSIFIED VISIT OR ASSIGNMENT BY A FOREIGN NATIONAL) with all approval signatures. Be sure Box #11 of Form 982 is completed. If you are not a visitor/assignee under a LANL/DOE approved Visit / Assignment Request, attach written justification from your host Division Director describing your need to access the ICN.

Authorization (required)

Print Manager Name (Group Leader or above)

Manager Z-Number

Group

Manager Signature (Group Leader or above)

Mail Stop

Date

If you are NOT a LANL employee, obtain your LANL contact's signature in addition to the contact's manager's signature.

NOTE: LANL contacts are regular Laboratory employees. Contacts are responsible for obtaining annual re-authorizations, forwarding renewals, and notifying the ICN Password Office of changes in user or contact status.

Print LANL Contact Name

Contact Z-Number

Phone Number

Group

LANL Contact Signature

Mail Stop

Date

Reader Feedback

Feedback helps us to provide a document that responds to the changing needs of its readership. If you have comments or questions about this publication, please let us hear from you. We have reserved the back of this form for that purpose. We also accept articles for publication that are of interest to our readers. Contact the managing editor for more information. This form is also used for new subscriptions, deletions, or changes. Instructions are on the back. If you prefer to contact us by E-mail, send your comments and/or subscription request to finney@lanl.gov.

Do Not Staple
Fold on This Line First



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 88 LOS ALAMOS NM

POSTAGE WILL BE PAID BY THE ADDRESSEE

MAIL STOP B251
ATTN: MIKE FINNEY, MANAGING EDITOR
CUSTOMER SERVICE GROUP (CIC-6)
LOS ALAMOS NATIONAL LABORATORY
PO BOX 1663
LOS ALAMOS NM 87544-9916



Do Not Staple, Seal with Tape
Fold Here

cut along dashed line

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

BITS is published by Los Alamos National Laboratory. If you would like to be added to or deleted from our mailing list, please check the appropriate line, complete the form below, and mail us the form.

_____ Delete my name from the **BITS** mailing list.

_____ Change my name/address as indicated below.

Date

Mail Stop

Organization

Zip

Employee Z#

INDEX

This index is organized according to keywords taken from the original titles of BITS articles. Keywords are listed in alphabetical order and the coverage of articles goes back one year from the date of the current issue.

Keywords	Title of BITS Article	Date	Page
ADSM	ADSM Now Available	Oct. '95	11
Beta	Machine BETA is Being Upgraded	Sept. '95	19
BITS	Welcome to On-Line BITS	May '95	2
	Distribution List for On-Line BITS	June '95	4
Brain Mapping	Brain Mapping: Applications Support for P-21's MEG-Based Brain Studies	Sept. '95	15
Break Sequences	Break Sequences for Inform or Micom Connections: Help! My Computer Froze and I Can't Get Out!	May '95	8
CCF <small>(Central Computing Facility)</small>	New Customer Assistance Desk for CCF	Oct. '95	5
CFS <small>(Common File System)</small>	CSF-Recursive List (revised)	Aug. '95	10
	New Rate Structure for CFS	Nov. '95	5
	Remote-Backup Service Provided by CFS	Dec. '95	2
CHEMLABL	CHEMLABL Program Provides Labwide Consistency in Labeling Chemicals	Nov. '95	4
CIC <small>(Computing, Information, and Communications)</small>	CIC Consultants: Who to Call	Apr. '95	1
	Holiday Schedule for CIC Computing Services	Dec. '95	2
CIC-6	CIC-6 Discontinues Hard Copy Documentation Service	Nov. '95	7
CIC-7	CIC-7 Highlights Mid-Range Systems Team	July '95	3
	CIC-7 Sponsors Computing Conference	Apr. '95	6
	CIC-7 Production Control Team	Sept. '95	12
CIC-8	Making Visualization Work for You: CIC-8 Visualization/Video Laboratory	Oct. '95	3
CIC-11	CIC-11 Announces the Availability of NFS	Oct. '95	16
Cluster	Mathematica on the Cluster	Aug. '95	12
	MASS Installed on the IBM Cluster	Oct. '95	21
	Balancing and Distributing Workload on the Clusters and Load Sharing Facility	Nov. '95	17
	New AIX Parallel Environment and HPF Products Now Available on the Open IBM Cluster	Dec. '95	11
Computational Modeling	Tri-Lab Engineering Conference on Computational Modeling	July '95	4
Condor	Condor: Application for Networking Workstations	Sept. '95	17
Cray	CraySoft Programming Environments for SPARC Systems	Aug. '95	4
	Things Mother Never Told You about Cray Computing at LANL	June '95	9
Database	Tracking Waste Management with Integrated Databases	June '95	11
	ABI/INFORM Business Periodicals Database Now Available at Your Desktop	Dec. '95	3
Desktop	Adopting Desktop Standards to Expand Labwide Information Sharing	Oct. '95	6
	What's on Your Mac's Desktop?	Dec. '95	8
Digital Village	The Digital Village Project	Oct. '95	12
Durango Conference	Durango Conference Tries Something New in Electronic Communications	Aug. '95	1
EIS <small>(Employee Information System)</small>	Entering Contractors and External Customers in the EIS	Mar. '95	15
E-mail	Basics of E-mail Attachments	Mar. '95	16
	OFVAX ALL-IN-1 E-Mail System Renamed and Upgraded	June '95	10
Environmental Cleanup	New Computer Programs Support Environmental Cleanup	Dec. '95	1
Eudora	Eudora Pro Released This Month	July '95	6
	Perils Of Eudora: At Work, At Home, and on the Road	May '95	10
	Using Filters in Eudora	Nov. '95	23
	Utilizing Attachments with Eudora PC	Oct. '95	25
Home Pages	Guidelines for LANL Home pages	Sept. '95	6
HPD	HPD: Heterogeneous Parallel Debugger	Nov. '95	2

Keywords	Title of BITS Article	Date	Page
Human Genome Project	Applications Programming and the Human Genome Project: Solving the Three-Billion-Piece Puzzle	July '95	1
	Applications Programming and the Human Genome Project: Part 2	Aug. '95	5
	Applications Programming and the Human Genome Project: Part 3	Sept. '95	12
HTML	Why Not <BLINK> and <CENTER>?—Writing HTML for Portability	Nov. '95	10
	Standard HTML Reaches More People and Saves Time	Dec. '95	7
ICN <small>(Integrated Computing Network)</small>	Improved Turnaround for Processing New ICN Accounts	Apr. '95	6
	New Networking Document for ICN Users	Apr. '95	10
Information Architecture (IA)	IA Targets Infrastructure Services	Mar. '95	12
	Results from the Information Architecture Survey	Aug. '95	7
	IA Project Proposes Web Publication Guidelines	Dec. '95	4
Library Without Walls	Library Without Walls: Digital Library Developments at LANL's Research Library	Apr. '95	4
Locally Developed Software	Recommendations for Locally Developed Software Approved	May '95	4
Lotus Notes	Lotus Notes: Enhancing Network Communications	Mar. '95	1
Macintosh	TN 3270 For the Macintosh: Time Entry for Contract Employees	Sept. '95	25
NERD	NERD: Providing Automated Network Anomaly Detection and Notification	June '95	1
Netscape	Everything you need to know about Netscape at LANL	Apr. '95	11
PAGES	Large-Scale Printing Available through PAGES	May '95	1
	PAGES for Macintosh and Windows Is Available	July '95	5
Password	Password Office Procedural Change	Aug. '95	9
	ICN Password Renewals: More Frequent but Easier	Oct. '95	15
PVM <small>(parallel virtual machine)</small>	PVM 3.3 Development Toolbox	Mar. '95	4
	Getting the Most out of PVM	June '95	5
Register	Accessing Register.lanl.gov from Open and Administrative Lines with Load Sharing Facility	Nov. '95	15
Resumix	Integration of Access and Resumix Saves Time and Money	Nov. '95	6
Scientific Data Management	Students Contribute to Scientific Data Management (SDM) Project	Oct. '95	9
Software	Obtaining Software Electronically is Easier Than Ever	Sept. '95	10
Sun F77	Sun F77 (and ld): A User's Notes and Helpful Hints	Oct. '95	18
TeleMed	TeleMed: Better Medicine through Sunrise Technologies	Mar. '95	8
Test Development	New Computer Programs Automate Test Development and Scoring	Nov. '95	1
TRANSIMS	TRANSIMS: Tools for Transportation Planning, Traffic Engineering, and Environmental Impact Analysis	May '95	6
Tymnet	Tymnet Service to be Canceled	Nov. '95	3
UNICOS	New Scheduling System for UNICOS	Aug. '95	2
	UNICOS 8.0: Modifications to Purge Process	Mar. '95	3
	Older UNICOS Software Being Retired	Oct. '95	3
Virtual Reality	Virtual Reality Comes to LANL	Oct. '95	1
World Wide Web (WWW or Web)	The World Wide Web at LANL	Sept. '95	1
	The World Wide Web: Past and Present	Sept. '95	1
	CIC Division and the WWW	Sept. '95	3
	Web Developments at LANL's Research Library	Sept. '95	5
	ICN Consultants Consult the Web	Sept. '95	7
	BITS and the Web	Sept. '95	11
	Information Architecture Endorses WWW, Calls for Phasing out Gopher Service	Sept. '95	8
	Proposal Mining and Marketing on the World Wide Web	Nov. '95	8
	Revised "Computing at LANL" Web Menus	Nov. '95	13
	Web Access to SCISearch Database Now Available	Nov. '95	14
	The LANL Web Mistress	Dec. '95	6
	Windows 95 is Here	Sept. '95	20

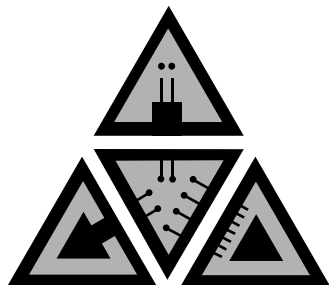
Produced by the Computing, Information, and Communications (CIC) Division
Managing Editor: Mike Finney (667-2241/finney@lanl.gov)
Design and Layout: Gloria Sharp and Mike Finney
Printing: Media Group (CIC-17)

Los Alamos National Laboratory, an affirmative action/equal opportunity employer, is operated by the University of California for the United States Department of Energy under contract W-7405-ENG-36.

All company names, logos, and products mentioned herein are registered trademarks of their respective companies. Reference to any specific company or product is not to be construed as an endorsement of said company or product by the Regents of the University of California, the United States, the U.S. Department of Energy, nor any of their employees.

Los Alamos
NATIONAL LABORATORY

Los Alamos, New Mexico 87545



SUPERCOMPUTING '96

NOVEMBER 17-22 • PITTSBURGH

Conference Information

WWW:<http://www.supercomp.org/sc96/>
FTP:<ftp://ftp.supercomp.org> (cd /pub/sc96)
E-MAIL: questions96@mail.supercomp.org
PHONE: 1-800-hpc-5989 or 412-268-8792
FAX: 412-268-5832

Exhibitor Information

PHONE: 1-800-423-4330 or 214-423-4286
FAX: 214-423-4323
WWW:<http://www.supercomp.org/sc96/DCexpo>
E-MAIL: dcexpo@aol.com

General Address

SUPERCOMPUTING '96
Pittsburgh Supercomputing Center
Mellon Institute Building
4400 Fifth Avenue
Pittsburgh, Pennsylvania 15213

The theme of this year's conference is *Computers at Work*. We are especially interested in presentations that survey state-of-the-art usage of computing in specific applications—including commercial applications—and that discuss which architectures best fit an application in the areas of sustained performance, cost/performance, and so forth. We are also interested in presentations that survey the use and impact of new computing technology and in presentations that survey the integration of a range of computing systems, such as laptops, SMPs, MPPs, supercomputers and communications systems.

You are invited to contribute to the following program elements: technical papers, tutorials, education session, roundtables, panels, research exhibit, poster exhibit, SCInet'96 and the high performance computing challenge. Other components of SC'96 include: industry exhibit, presentation of the Bell and Fernbach awards, invited presentations and panels and recognition of the 50th anniversaries of ACM and IEEE Computer Society.

Los Alamos

NATIONAL LABORATORY

Los Alamos, New Mexico 87545

BITS is published monthly to highlight recent computing and communications activities within the Laboratory and to update hardware and software changes on the Laboratory's Integrated Computing Network (ICN). We welcome your suggestions and contributions. BITS may be accessed electronically via Mosaic and Netscape.

Enter the following URL:

http://www.lanl.gov/computer-information/ComputingNews/bits_homepage.html

LALP-96-11 (1-96)

Nonprofit
organization
US Postage

PAID

Los Alamos, NM
Permit No. 107